



(43) International Publication Date  
6 January 2005 (06.01.2005)

PCT

(10) International Publication Number  
**WO 2005/000740 A2**

(51) International Patent Classification<sup>7</sup>: **C01B 33/00**

(21) International Application Number:  
PCT/BE2004/000094

(22) International Filing Date: 28 June 2004 (28.06.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
0315012.5 27 June 2003 (27.06.2003) GB

(71) Applicant (for all designated States except US): **K.U. LEUVEN RESEARCH & DEVELOPMENT [BE/BE]**;  
Groot Begijnhof, Benedenstraat 58, B-3000 Leuven (BE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **MARTENS, Johan, Adriaan [BE/BE]**; Borheidestraat 25, B-2040 Huldenberg (BE). **KIRSCHHOCK, Christine, Eva, Antonia**

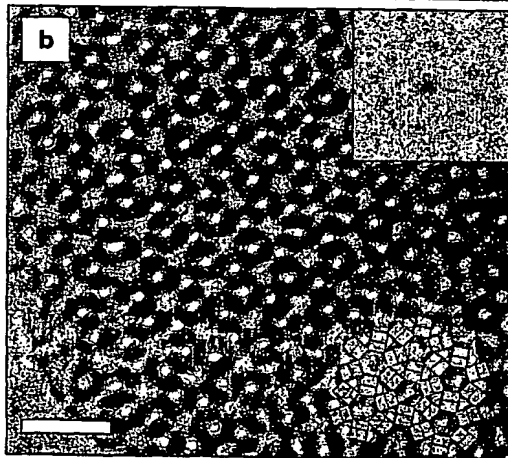
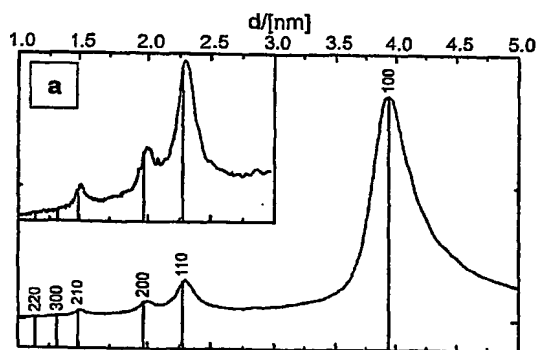
[DE/DE]; In der Kirchtanne 31, D-64297 Darmstadt (DE). **KREMER, Sebastien, Philippe, Brigitte [BE/BE]**; Notelaarstraat 144, B-1030 Schaarbeek (BE). **AERTS, Alexander, Jan, Maria, Herman, Eugene [BE/BE]**; Consciencestraat 45 bus 6, B-2018 Antwerpen (BE). **VAN DEN MOOTER, Guy [BE/BE]**; Lostraat 69, B-3212 Pellenberg (BE). **VAN HUMBEECK, Jan [BE/BE]**; Elzenbroekstraat 20, B-3053 Haasrode (BE).

(74) Agents: **BIRD, William, E. et al.**; Bird Goën & Co, Klein Delenstraat 42 A, B-3020 Winksele (BE).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,

[Continued on next page]

(54) Title: **CRYSTALLINE MESOPOROUS OXIDE BASED MATERIALS USEFUL FOR THE FIXATION AND CONTROLLED RELEASE OF DRUGS**



(57) Abstract: The invention describes a new class of crystalline silica material having two levels or porosity and structural order. At the first level, building units are nanoslabs of uniform size having zeolite framework. At the second structural level, nanoslabs are assembled, e.g. linked through their corners, edges or faces following patterns imposed by interaction with cationic surfactant or triblock copolymer molecules. After evacuation of these molecules, microporosity is obtained inside the nanoslabs, and a precise mesoporosity between the nanoslabs depending on the tiling pattern of the zeolite nanoslabs, as evidenced by X-ray diffraction. These materials are useful for the fixation of biologically active species, such as poorly soluble drugs.

BEST AVAILABLE COPY

WO 2005/000740 A2



TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

- (84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Declaration under Rule 4.17:**

— *of inventorship (Rule 4.17(iv)) for US only*

**Published:**

— *without international search report and to be republished upon receipt of that report*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*